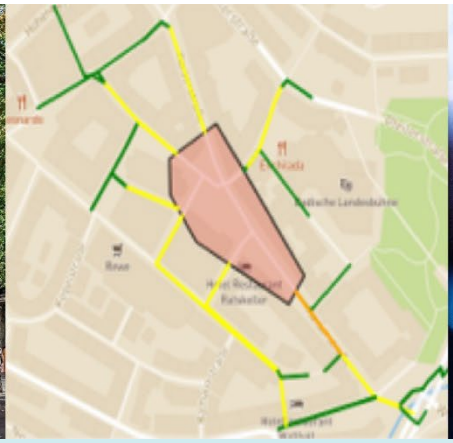
European Commission

SCIENCE FOR POLICY BRIEF

*Data and Tools to Counter Terrorism*

# Vehicle SPEed Evaluation and Dynamics Assessment (V-SPEED)




## HIGHLIGHTS

- → Automatically calculate vehicle speeds for potential approach paths towards potential target locations for multiple access and entry points.
- → Fine-tune results through specific user-defined approach paths.
- → Support Vehicle Dynamics Asessements using V-SPEED. Save configurations for later and establish automated reports.
- → 'Software as a Service (SaaS) approach' provides easy access whenever needed, without worrying about compatibility, installation, maintenance or other constraints.
- → Convenient and controlled access via 'EU Login'
- → JRC provides 'cost-free' access to interested stakeholders on a justified 'need-to-know' basis.

## Supporting stakeholders to assess hostile vehicle threats

### Purpose of V-SPEED

Vehicles can easily be used as a weapon in terrorist attacks, because they are simple to obtain and require little experience and preparation in handling. The countering of such threats is generally referred to as **Hostile Vehicle Mitigation (HVM)**.

The JRC developed an **application that automatically assesses the maximum speed of vehicles on approach roads** towards potential target locations. The application follows the logic of a **Vehicle Dynamics Assessment (VDA)** as an initial step in the mitigation process against vehicle-borne attacks.

### Vehicle Dynamics Asseesment (VDA)

A VDA assesses threats and vulnerabilities from hostile vehicles, in particular speeds on approach roads towards potential target sites. These can be public space locations or critical infrastructure sites and they may involve multiple access and entry points.

A VDA may also support HVM for crime prevention (attacks against high net-values, such as ATM's, jewelry stores, etc.) or for counter-terror purposes. The modus operandi can involve the use of the vehicle itself as a weapon, so called vehicle ramming attacks targeting pedestrian crowds, or the use of the vehicle as a delivery method, often for improvised explosive devices (co called VBIED's). The objective is often to breach a perimeter in order to deliver the IED closer to the intended target.

The VDA can evaluate whether new or already installed HVM measures are appropriate for the calculated maximum approach speeds. It takes into account vehicle sizes, acceleration ratios and vehicle weights for those that can realistically encroach on target locations. It considers the surrounding street network and topography. It provides a methodology and formalises the decision-making process while ensuring that HVM measures are in line with the assessed threat, thereby contributing to cost-effectiveness. A VDA should be carried out by a recognised HVM expert and decision-makers should refer to the local legal context.

## How does V-SPEED support a VDA?

The *Vehicle SPEed Evaluation and Dynamics Assessment (V-SPEED)* application automates the calculation of vehicle speeds for possible approach paths to a user-selected area of interest. The application retrieves the surrounding street network, determines intersection points with the selected area and calculates the speed at these points based on the vehicle starting speed, its acceleration ratio and several street geometry variables, in particular street width. Increasing approach speeds are visualized through a colour code and displayed for street segment and intersection points.

The application's automatic mode allows identifying the most critical approach paths. A manual mode allows for fine-tuning of results by investigating user-defined specific approach paths in more detail. Configurations can be saved and re-used for complementary assessments of the same location at a later stage. A report function allows exporting results as a PDF file.

## QUICK GUIDE - Learn more about the application's concept and functionalities

A *tutorial video* explains the application's main features.

The guideline 'JRC Technical Report: Selecting proper security barrier solutions for public space protection- Protection against vehicle-ramming attacks' provides information on the underlying concept and equations. It is available upon request via jrc-public-spaces@ec.europa.eu.

## How to get access?

### Software as a Service and EU Login

Access to all applications follows a '**Software as a Service (SaaS) approach**', making it easy and convenient for authorized users to access them whenever needed, without worrying about compatibility, installation, maintenance or other constraints.

Access is provided to interested stakeholders on a ***need-to-know basis***. Justified access requests can be made via the website. Further instructions are available via the *'How to access the tools' page*.

Secure and controlled access is conveniently provided via the '**EU Login**' account using mandatory Two Factor Authentication (2FA).

### Map styles

V-SPEED provides the possibility to display approach paths both in the standard street networks layer as well as using a satellite image layer. This allows for better identification of potential road obstacles and greater precision.

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